

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 8c

BESSEMER STEEL, 0.1% CARBON

ANALYST*	C	Mn		P		S		Si	COPPER H ₂ S-CuS-CuO	NICKEL Weighed as nickel dimethylglyoxime	CHROMIUM FeSO ₄ -KMnO ₄ titration	VANADIUM	MOLYBDENUM	ARSENIC
	CARBON Direct combustion	MANGANESE 1. Bisulfate (FeSO ₄ -KMnO ₄)	2. Other methods	PHOSPHORUS 1. Alkali-Molybdate ^a	2. Gravimetric (Weighed as Mg ₂ P ₂ O ₇ after removal of arsenic)	1. SULPHUR Gravimetric (Direct oxidation and final precipitation in reduced solution)	2. SULPHUR Evolution with HCl (1:1) ZnS-Iodine (theoretical sulphur titre ^b)	SILICON Sulphuric acid dehydration						
1.....	0.083	0.435	-----	0.106	0.105	0.093	0.092	0.026	0.011	0.002	0.010	0.003	0.001	-----
2.....	.081	.439	-----	.105	.107	.094	.094	.028	.005	.002	.005	.005	.002	0.010
3.....	.085	.426	^c 0.434	.107	.107	.093	.093	.027	.009	.003	.009	-----	.004	.011
4.....	.083	.425	-----	^d .108	-----	.096	-----	.023	^e .009	-----	.01	-----	-----	-----
5.....	.087	.43	-----	.108	-----	^f .091	.092	^g .023	.015	-----	-----	-----	-----	-----
6.....	.086	.440	-----	-----	.107	^f .093	.091	.024	.006	-----	-----	-----	-----	-----
7.....	.084	-----	^e .444	.105	-----	.092	.091	^g .028	-----	-----	-----	-----	-----	-----
8.....	.08	.43	-----	ⁱ .106	-----	.090	.090	^h .027	.012	-----	-----	-----	-----	-----
9.....	.08	.451	^j .45	.106	-----	-----	-----	.026	-----	-----	-----	-----	-----	-----
Averages.....	.083	.435	.443	.106	.107	.093	.092	.026	.010	.002	.009	.004	.002	.011
General Averages.....	^k .083	.437		.106		.093	.092	.026	.010	.002	.009	.004	.002	.011

^a Precipitated at 40° C., washed with 1 per cent KNO₃ solution and titrated with alkali standardized by the use of B. S. benzoic acid and the 23:1 ratio.

^b Value obtained by standardization of titrating solution against sodium oxalate through KMnO₄ and Na₂S₂O₅.

^c Bisulfate.—Arsenite.

^d Permanganate titration.

^e Na₂S₂O₅—CuS—CuO.

^f Precipitated in FeCl₃ solution.

^g Drown's method.

^h Double dehydration with hydrochloric acid.

ⁱ Precipitated at 90° C. instead of 40° C. and used 25:1 instead of 23:1 ratio of NaOH to P.

^j Persulphate.—Arsenite.

^k If proper measures are not taken to remove oxides of sulphur, results for carbon as high as 0.11 per cent may be obtained. Most of the results given on this certificate were obtained by conducting the gases from the combustion tube through sulphuric acid saturated with chromic acid before passing them into the absorption bulb.

* INDEX TO ANALYSTS

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This standard is not recommended for colorimetric carbon determinations, because of uncertainty as to the condition of the carbon.

Washington, D. C.

GEORGE K. BURGESS,
Director.